

Customer No.: 31561
Docket NO.: 11964-US-PA
Application No.: 10/707,704

REMARKS**Present Status of the Application**

The Office Action mailed on June 30th, 2005 rejected claims 9-11 and 14-18 under 35 U.S.C. 103(a), as being unpatentable over Chang et al. (U.S. 6,754,105; hereafter Chang) in view of Yoshikawa (U.S. 6,335,554; hereafter Yoshikawa) further in view of Forbes et al. (U.S. 2004/0004245; hereafter Forbes). Applicants traverse this rejection but have amended claim 9 to improve clarity. No new matter has been added to the application by the amendments made herein. Therefore, claims 9-11 and 14-18 possess allowable claimed feature and withdrawing the rejections to claims 9-11 and 14-18 is respectfully requested.

Interview Summary

Interview with the Examiner had been conducted on September 26th, 2005. During the telephone interview, the difference between Chang's application and the present invention was emphasized. The present invention differentiates from Chang's application for at least the reasons that the charge trapping layer 50a, 50b of Chang is formed only on the sidewalls of the trench, whereas the charge trapping layer 206 of the present invention is formed conformal to the trench surfaces covering the bottom and the sidewalls of the trench. Accordingly, the Examiner indicates that incorporating the features of the charge trapping layer being conformal to the trench surfaces or similar languages into claim 9 shall define over the prior art.

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Discussion of Office Action Rejections

The Office Action rejected the claims 9-11 and 14-18 under 35 U.S.C. 103(a), as being unpatentable over Chang in view of Yoshikawa further in view of Forbes.

Applicants respectfully traverse this rejection but have amended claim 9 to clearly define the non-volatile memory device of the invention according to the indication made by the Examiner in the telephone interview. As amended, claim 9 recites:

Claim 9. A non-volatile memory device, comprising:
a substrate, wherein the substrate has a trench;
a gate disposed over and completely filling the trench;
a plurality of spacers located on the sidewalls of the gate;
a bottom oxide layer disposed between the gate and the trench surface;
a charge-trapping layer disposed between the gate and the bottom oxide layer, wherein the charge-trapping layer is conformal to a bottom surface of the trench and at least one sidewall of the trench;
a top oxide layer disposed between the gate and the charge-trapping layer;
a plurality of lightly doped regions located in the substrate underneath the spacers; and
a plurality of source/drain regions located at both sides of the trench in the substrate.

(Emphasis Added). Applicants submit that the claims patentably define over the prior art of record, for at least the reason that the prior arts fail to disclose at least these elements emphasized above.

As the same reasons discussed in the telephone interview, Chang fails to teach or suggest that the charge trapping layer is formed conformal to the bottom surface and sidewalls of the trench. Instead, Chang emphasizes that the charge trapping layers 50a and 50b are only located on the sidewalls of the trench. Furthermore, none of the cited

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references mentions the feature that the charge trapping layer is formed to cover the bottom and the sidewalls of the trench. Therefore, even if people skilled in the art did modify Chang's application by referring to Yoshikawa's application and Forbes' application, the combination result would not possess the same advantage as what claimed by the present invention.

For at least the foregoing reasons, Applicant respectfully submits that independent claim 9 patentably defines over the prior art references, and should be allowed. For at least the same reasons, dependent claims 10-11 and 14-18 patentably define over the prior art as well.

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CONCLUSION

For at least the foregoing reasons, it is believed that the pending claims 9-11 and 14-18 are in proper condition for allowance. If the Examiner believes that a telephone conference would expedite the examination of the above-identified patent application, the Examiner is invited to call the undersigned.

Date :

Sept 30, 2005

Respectfully submitted,

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